

Applicant: Joel THOMSON  
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**Amendments to the Drawings**

Please replace the original drawing sheet "2/2" containing Figs. 3-5 with the Replacement Sheet attached as Exhibit A. The Replacement Sheet includes Fig. 4 in which reference number "74" and the corresponding lead line have been removed as shown in the Annotated Sheet Showing Changes accompanying the Replacement Sheet. Figs. 3 and 5 on the Replacement Sheet are unchanged from the original drawing sheet.

REMARKS

Claims 1-21 were pending in this application. Claims 1-4, 6, and 15 have been amended. Claims 17-21 have been withdrawn. Accordingly, claims 1-16 are presently being examined.

Sections 3 and 4 of the Office Action objected to the specification because of two informalities. More specifically, the Office Action required correction of: (1) the Title of the invention to reflect the elected invention only, that is, the apparatus; and (2) "flights 14" to read "flights 32" on page 10 in line 15 of the specification.

As required by the Office Action, applicant hereinabove has amended the Title of the invention by deleting the words 'And Methods' so that the Title reflects the elected invention as recited in claims 1-16 only, that is: "Devices For Maximizing Purge Effectiveness For Molding Machines". Support for this amendment can be found, inter alia, on page 4 in lines 1-8 of the present specification.

Applicant hereinabove also has amended the specification to correct a typographical error by referring to "screw flights 32" instead of 'screw flights 14'. Support for this amendment can be found, inter alia, on page 9 in lines 16-19, and in Figs. 1 and 2 of the present specification.

In view of the amendments to the Title and the specification, and the remarks above, applicant respectfully requests that the objections to the specification as having informalities be reconsidered and withdrawn.

Section 5 of the Office Action objected to the drawings under 37 C.F.R. §1.84(p)(5) because the drawings include a reference character not mentioned in the description. More

specifically, the Office Action required corrected drawing sheets in which reference character "74" is removed from the figures.

Applicant hereinabove has amended Fig. 4, the only figure which includes reference character "74", to remove both the reference character and the corresponding lead line. A Replacement Sheet with corrected Fig. 4 and unchanged Figs. 3 and 5 is attached as Exhibit A. An Annotated Sheet Showing Changes accompanies the Replacement Sheet in Exhibit A.

In view of the amendments to Fig. 4, the attached Replacement Sheet, and the remarks above, applicant respectfully requests that the objection to the drawings be reconsidered and withdrawn.

Section 6 of the Office Action objected to claims 6-13 under 37 C.F.R. §1.75(c) as being of improper dependent form for failing to further limit the structure of the independent claim. More specifically, according to the Office Action, claims 6-13 only recite a material intended to be used with apparatus, and thus are not a structural limitation.

Applicant hereinabove has amended claim 6 to more clearly recite that the recited apparatus further comprises "a quantity of the material in the barrel", and further, that this quantity of the material includes "a cleaning compound". Accordingly, applicant respectfully submits that the cleaning compound, which is at least a quantity of the material in the barrel, is now explicitly recited as being 'part of' the apparatus. Thus, both the quantity of material and the cleaning material are now clearly recited as further structural limitations of the apparatus of amended claim 6 and further limit amended claim 6 from the previous claim, that is amended claim 1. Therefore,

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applicant respectfully submits that amended claim 6 is in proper dependent form.

Since claims 7-13 depend directly or indirectly on amended claim 6 and further limit the structural element of the "cleaning compound", applicant respectfully submits that amended claims 7-13 are not in improper dependent form for at least the same reasons discussed above with respect to amended claim 6.

In view of the amendment to claims 6 and the remarks above, applicant respectfully requests that the objections to claims 6-13 as being in improper dependent form be reconsidered and withdrawn.

Sections 7 and 8 of the Office Action rejected claims 3 and 4 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter that the applicant regards as the invention. More specifically, the Office Action stated that both claims 3 and 4 recite "the first and second modes" without an antecedent basis for the "second mode".

In addition to the further amendments discussed in response to Section 9-11 of the Office Action, see below, Applicant hereinabove has further amended the claims 1, 2, 3, 4, and 15 to remove all references to "first mode" and/or "second mode", which removes all references to these modes in the pending claims. Accordingly, applicant respectfully submits that the rejection of claims 3 and 4 as failing to provide antecedent basis for "second mode" is now moot.

In view of the amendments to claims 1, 2, 3, 4 and 15, and the remarks above, applicant respectfully requests that the rejection of claims 3 and 4 as being indefinite be reconsidered and withdrawn.

Sections 9 and 10 of the Office Action rejected claims 1-16 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,988,281 to Heathe et al. ("Heathe patent").

According to the Office Action, the Heathe patent has each element of the invention as recited in claims 1-5 and 14-16, and that with respect to claims 6-13, the recitation of materials which are used by the claimed apparatus do not have patentable weight in apparatus claims.

Applicant hereinabove has amended claim 1 to more clearly recite that the check valve has "means for selectively locking the check valve in an open position in response to axial motion along the barrel" which allows for bi-directional flow of material along the barrel. In addition, applicant has amended: (1) claim 2 to conform to the amendments to claim 1 and to recite that the "means for selectively locking" includes means responsive to the axial motion of the "check valve"; (2) claim 3 to conform to the amendments to claim 1 and to recite that the "means for selectively locking" includes means responsive to the axial motion of the "screw"; (3) claim 4 to more clearly recite "means for selectively unlocking the check valve from the open position" in response to rotational motion of the screw; and (4) claim 15 to more clearly recite that the "check valve locked in the open position comprises the protrusion located in a bottom portion of the slot" without reference as to how the locking occurs. Support for these amendments can be found, inter alia, on page 8 in lines 14-24, from page 11, line 19 to page 12, line 7, on page 9 in lines 11-16, and in Fig. 2 of the present specification.

Applicant respectfully submits that the Heathe patent, and the earlier patents discussed in the Heathe patent, see column 1

at lines 18-41 of the Heathe patent, relate to placing the check valve into a 'closed position' prior to the injection cycle so that backflow is minimized or prevented as the screw moves axially along the barrel during the injection cycle, see column 3 at lines 40-48 of the Heathe patent.

In contrast, the present invention teaches and recites in amended claim 1 "means for selectively locking" the check valve in an "open position" to allow bi-directional flow of material along the barrel. This locked open position is required by the present invention so that the cleaning cycle can use the axial motion provided for the 'normal' injection cycle to move the cleaning compound back and forth, that is, bi-directionally, along the barrel to "scour" the apparatus parts, see page 9 at lines 16-22 of the present specification. Thus, the Heathe patent teaches away from the present invention at least because the Heathe patent only discusses devices in which the check valve is in a closed position during the axial motion of the normal injection cycle, and thus does not teach or suggest "means for selectively locking the check valve in an open position ... to allow bi-directional flow of material along the screw", as taught by the present invention and as recited in amended claim 1.

In addition, before the device of the Heathe patent enters the injection cycle, the check valve state is changed, that is, closed, by "reverse" rotation of the screw, see column 3 at lines 40-42 of the Heathe patent. In contrast, the present invention teaches, and recites in amended claim 1, that the means which locks the check valve into the open position is in response to "axial motion" along the barrel. Thus, the device of the Heathe patent fails to teach or suggest a check valve

which has means to respond to axial motion along the barrel to lock the check valve into the open position to allow back and forth, that is, bi-directional flow for material along the screw as taught by the present invention and as recited in amended claim 1. Applicant also notes that while the earlier patents discussed in the Heathe patent 'close' the check valve by axial motion, these earlier patents are not discussed as 'locking' the check valve into an "open position" by such axial motion. Thus, the Heathe patent fails to teach or suggest "means for selectively locking the check valve in an open position in response to axial motion along the barrel", as taught by the present invention and as recited in amended claim 1.

Thus, for at least the reasons discussed above, applicant respectfully submits that the Heathe patent fails to teach or suggest the subject invention as recited in amended claim 1.

With respect to claims 6-13, as discussed above in response to Section 6 of the Office Action, applicant hereinabove has amended claim 6 to more clearly recite that the apparatus includes a quantity of material in the barrel which is a cleaning compound. Thus, applicant respectfully submits that since the cleaning compound is part of the apparatus, claim 6 has patentable weight. Also as discussed above, since claims 7-13 depend on claim 6, claims 7-13 also have patentable weight for at least the same reasons.

Since claims 2-16, as amended, depend directly or indirectly from amended claim 1, and because a claim which depends on another claim is subject to all the limitations of that other claim, applicant respectfully submits that claims 2-16 are not unpatentable over the Heathe patent for at least the reasons discussed above with respect to amended claim 1.

In view of the amendments to claims 1-4, 6 and 15, and the remarks above, applicant respectfully requests that the rejection of claims 1-16 as being anticipated by the Heathe patent be reconsidered and withdrawn.

Section 11 of the Office Action rejected claims 1, 2, 4, and 6-16 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,007,322 to Suumen et al. ("Suumen patent").

According to the Office Action, the device of the Suumen patent has each element recited in claims 1, 2, 4, and 14-16, and that with respect to claims 6-13, the recitation of materials which are used by the claimed apparatus do not have patentable weight in apparatus claims.

Applicant respectfully submits that, similar to the Heathe patent discussed above, the Suumen patent relates to: (1) placing the check valve into a 'closed position' prior to the injection cycle so that backflow is minimized or prevented as the screw moves axially along the barrel during the injection cycle, see column 4, lines 59 to column 5, line 14 of the Suumen patent; and (2) closing the check valve by "reverse" rotation of the screw, see column 7 at lines 22-37 of the Suumen patent.

In contrast, as discussed above with respect to the Heathe patent, the present invention teaches and recites in amended claim 1 "means for selectively locking" the check valve in the open position "in response to axial motion" along the barrel to allow bi-directional flow of material along the screw. In other words, without requiring rotation to lock the check valve open or closed as required by the Suumen patent. As discussed above, this locked open position is required by the present invention so that the cleaning cycle can use back and forth motion along



the barrel to "scour" the apparatus parts without closing the check valve.

Furthermore, the axial motion to which the means responds to lock the check valve as recited in amended claim 1 is important at least because most injection molding machines do not allow for reverse rotation of the screw, as required by the Suumen patent, and, indeed, for some machines, reverse rotation will cause the check valve to become unscrewed. Accordingly, unlike the Suumen patent, the present invention teaches and recites in amended claim 1 means for locking the check valve in the open position "in response to axial motion along the barrel". Thus, applicant respectfully submits that the Suumen patent fails to teach or suggest means for allowing bi-directional flow of material along the barrel by selectively locking the check valve in an open position in response to "axial motion", that is without reverse rotation, as taught by the present invention and as recited in at least amended claim 1.

Thus, for at least the reasons discussed above, applicant respectfully submits that the Suumen patent fails to teach or suggest the subject invention as recited in amended claim 1.

With respect to claims 6-13, as discussed above in response to Section 6 of the Office Action, applicant hereinabove has amended claim 6 to more clearly recite that the apparatus includes a quantity of material in the barrel which is a cleaning compound. Thus, applicant respectfully submits that since the cleaning compound is part of the apparatus, claim 6 has patentable weight. Also as discussed above, since claims 7-13 depend on claim 6, claims 7-13 also have patentable weight for at least the same reasons.

Since claims 2, 4, and 6-16, as amended, depend directly or indirectly from amended claim 1, and because a claim which depends on another claim is subject to all the limitations of that other claim, applicant respectfully submits that claims 2, 4, and 6-16 are not unpatentable over the Suumen patent for at least the reasons discussed above with respect to amended claim 1.

In view of the amendments to claims 1, 2, 4, and 15, and the remarks above, applicant respectfully requests that the rejection of claims 1, 2, 4, and 6-16 as being anticipated by the Suumen patent be reconsidered and withdrawn.

Sections 12 and 13 of the Office Action rejected claim 5 under 35 U.S.C. §103(a) as being unpatentable over the Suumen patent.

According to the Office Action, while the Suumen patent fails to provide a means for at least partially blocking the egress of material from the barrel, the Heathe patent does, and thus, it would have been obvious to modify the apparatus of the Suumen patent to at least partially block the egress of material from the barrel.

Because claim 5 depends from amended claim 1 and because a claim which depends on another claim is subject to all the limitations of that other claim, applicant respectfully submits that claim 5 is not unpatentable over the Suumen patent for at least the same reasons discussed above with respect to amended claim 1.

In view of the remarks above, applicant respectfully requests that the rejection of claim 5 as being unpatentable over the Suumen patent be reconsidered and withdrawn.

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In view of the amendments to the specification, the drawings, and claims 1-4, 6, and 15, and the remarks above, applicant respectfully submits that the objections and rejections raised in the Office Action have been overcome and earnestly solicits allowance of the application.

If a telephone interview would be of assistance in advancing prosecution of the subject application, applicant's undersigned attorney invites the Examiner to telephone him at the number provided below.

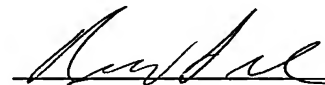
No fee, other than the fee for the three month extension of time, is deemed necessary in connection with the filing of this Amendment. However, if any fees are required, authorization is hereby given to charge the amount of any such fee to Deposit Account No. 03-3125.

Respectfully submitted,

I hereby certify that this paper is being deposited this date with the U.S. Postal Service as first class mail addressed to:

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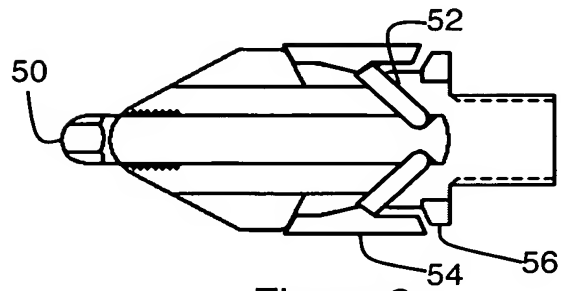


Figure 3

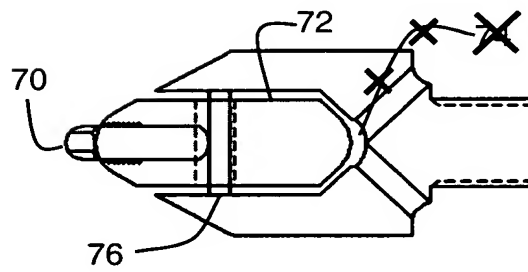


Figure 4

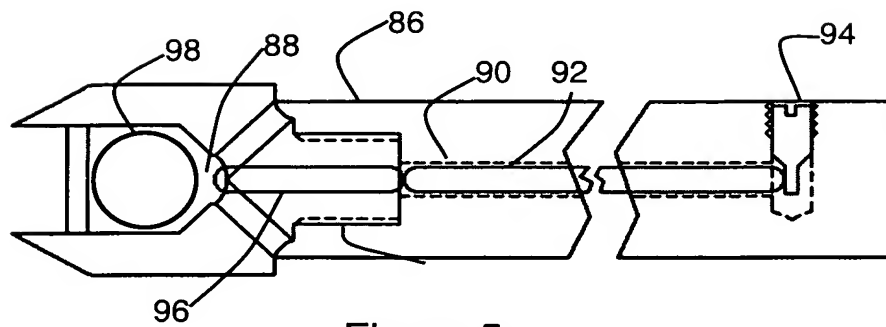


Figure 5